

REPORT DOCUMENTATION PAGE

1. Report Security Classification: UNCLASSIFIED			
2. Security Classification Authority:			
3. Declassification/Downgrading Schedule:			
4. Distribution/Availability of Report: DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.			
5. Name of Performing Organization: JOINT MILITARY OPERATIONS DEPARTMENT			
6. Office Symbol: C		7. Address: NAVAL WAR COLLEGE 686 CUSHING ROAD NEWPORT, RI 02841-1207	
8. Title (Include Security Classification): EFFECTS-BASED COMMAND AND CONTROL: AN ALTERNATIVE ORGANIZATIONAL STRUCTURE FOR THE JOINT FORCE COMMANDER (UNCLASSIFIED)			
9. Personal Authors: Lieutenant Commander Francis X Castellano, USN			
10. Type of Report: FINAL		11. Date of Report: 03 FEBRUARY 2003	
12. Page Count: 22		12A Paper Advisor (if any): Captain Michael Felmly, USN	
13. Supplementary Notation: A paper submitted to the Faculty of the NWC in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.			
14. Ten key words that relate to your paper: Command and Control, Effects-Based Command and Control, Joint Force Commander, Rapid Decisive Operations, Effects-Based Campaign, Effects-Based Operations (EBO), Standing Joint Force Headquarters (SJFHQ), Joint Task Groups, Joint Tactical Actions, Experimentation			
<p>15. Abstract: The United States military is in a period of transformation and is consequently conducting significant research, analysis, and experimentation to determine the nature of future warfare and its required joint force capabilities. U.S. Joint Forces Command, the lead military organization tasked with exploring military transformation and experimentation, has proposed that joint and combined operations in the 21st century will be characterized by a concept known as Rapid Decisive Operations (RDO).</p> <p>As part of the research and analysis of the RDO concept, exploration into the ways in which the Joint Force Commander (JFC) will need to organize their command and control (C2) architecture to match the future war fighting environment is occurring. Based on initial evidence, it appears that the current C2 architecture and "ad hoc" nature of the JFC's headquarters structure will not adequately support the RDO concept.</p> <p>An entirely new approach to organizing the JFC C2 architecture is needed in order to more efficiently and effectively plan and execute an effects-based campaign; thereby fully capitalizing on the speed and agility envisioned by RDO. This paper proposes that an Effects-Based Command and Control architecture may be the answer. An Effects-Based Command and Control architecture is primarily based on the ability to plan, coordinate, and execute an effects-based campaign; taking into consideration all elements of national power in order to counter the adversary. This conceptual C2 architecture leverages and incorporates the interrelated concepts of RDO, effects-based campaigning, effects-based operations, the Standing Joint Force headquarters organization, and joint tactical groups/joint tactical actions into one complete C2 structure for the JFC.</p>			
16. Distribution / Availability of Abstract:	Unclassified X	Same As Rpt	DTIC Users
17. Abstract Security Classification: UNCLASSIFIED			
18. Name of Responsible Individual: CHAIRMAN, JOINT MILITARY OPERATIONS DEPARTMENT			
19. Distribution Statement		20. Distribution Statement	

**NAVAL WAR COLLEGE
Newport, R.I.**

**EFFECTS-BASED COMMAND AND CONTROL:
AN ALTERNATIVE ORGANIZATIONAL STRUCTURE FOR THE JOINT FORCE
COMMANDER**

By

Francis X. Castellano

Lieutenant Commander, United States Navy

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: _____

**Advisor: _____
Captain Michael Felmly, USN
Naval Warfare Development Command, Newport, RI**

03 February 2003

ABSTRACT

The United States military is in a period of transformation and is consequently conducting significant research, analysis, and experimentation to determine the nature of future warfare and its required joint force capabilities. U.S. Joint Forces Command, the lead military organization tasked with exploring military transformation and experimentation, has proposed that joint and combined operations in the 21st century will be characterized by a concept known as Rapid Decisive Operations (RDO).

As part of the research and analysis of the RDO concept, exploration into the ways in which the Joint Force Commander (JFC) will need to organize their command and control (C2) architecture to match the future war fighting environment is occurring. Based on initial evidence, it appears that the current C2 architecture and "ad hoc" nature of JFC's headquarters structure will not adequately support the RDO concept.

An entirely new approach to organizing the JFC C2 architecture is needed in order to more efficiently and effectively plan and execute an effects-based campaign; thereby fully capitalizing on the speed and agility envisioned in RDO. This paper proposes that an Effects-Based Command and Control architecture may be the answer. An Effects-Based Command and Control architecture is primarily based on the ability to plan, coordinate, and execute an effects-based campaign; taking into consideration all elements of national power in order to counter the adversary. This conceptual C2 architecture leverages and incorporates the interrelated concepts of RDO, effects-based campaigning, effects-based operations, the Standing Joint Force headquarters organization, and joint tactical groups/joint tactical actions into one complete C2 structure for the JFC.

"The unparalleled strength of the United States armed forces, and their forward presence, have maintained the peace in some of the world's most strategically vital regions. However, the threats and enemies we must confront have changed, and so must our forces. A military structured to deter massive Cold War-era armies must be transformed to focus more on how an adversary might fight rather than where and when a war might occur. We will channel our energies to overcome a host of operational challenges."

"Innovation within the armed forces will rest on experimentation with new approaches to warfare, strengthening joint operations, exploiting U.S. intelligence advantages, and taking full advantage of science and technology."

- The National Security Strategy of the United States of America

I. INTRODUCTION

As evidenced above, the United States military is in a period of transition on all fronts - doctrine, organization, training, material, leadership, personnel, and facilities (DOTMLP-F). Significant research, analysis, and experimentation is being conducted to determine the nature of future warfare and its required joint force capabilities. One such area of research concerns the vision of future joint operations. U.S. Joint Forces Command (USJFCOM), the Secretary of Defense's lead military organization tasked with exploring military transformation and experimentation, envisions the 21st century joint force will be identified by four key characteristics: effects-based, knowledge-centric, coherently joint, and fully networked.¹ In response to this vision, USJFCOM is proposing a new conceptual approach to joint and combined 21st century operations that is becoming known as Rapid Decisive Operations (RDO). In a broad context, the RDO concept addresses how a Joint Force Commander (JFC) can identify, organize, and employ the right balance of military capabilities in an intense, focused, non-linear campaign against a capable, adaptive enemy in order to defeat the adversary's strategic and operational centers of gravity in a rapid fashion. The RDO concept incorporates the integrated application of the main and enabling tenets of

"The unparalleled strength of the United States armed forces, and their forward presence, have maintained the peace in some of the world's most strategically vital regions. However, the threats and enemies we must confront have changed, and so must our forces. A military structured to deter massive Cold War-era armies must be transformed to focus more on how an adversary might fight rather than where and when a war might occur. We will channel our energies to overcome a host of operational challenges."

"Innovation within the armed forces will rest on experimentation with new approaches to warfare, strengthening joint operations, exploiting U.S. intelligence advantages, and taking full advantage of science and technology."

- The National Security Strategy of the United States of America

I. INTRODUCTION

As evidenced above, the United States military is in a period of transition on all fronts - doctrine, organization, training, material, leadership, personnel, and facilities (DOTMLP-F). Significant research, analysis, and experimentation is being conducted to determine the nature of future warfare and its required joint force capabilities. One such area of research concerns the vision of future joint operations. U.S. Joint Forces Command (USJFCOM), the Secretary of Defense's lead military organization tasked with exploring military transformation and experimentation, envisions the 21st century joint force will be identified by four key characteristics: effects-based, knowledge-centric, coherently joint, and fully networked.ⁱ In response to this vision, USJFCOM is proposing a new conceptual approach to joint and combined 21st century operations that is becoming known as Rapid Decisive Operations (RDO). In a broad context, the RDO concept addresses how a Joint Force Commander (JFC) can identify, organize, and employ the right balance of military capabilities in an intense, focused, non-linear campaign against a capable, adaptive enemy in order to defeat the adversary's strategic and operational centers of gravity in a rapid fashion. The RDO concept incorporates the integrated application of the main and enabling tenets of *Joint Vision 2020* (JV2020). Additionally, the concept proposes that the JFC will conduct an effects-based campaign at the

operational level of war while effects-based operations will occur at the operational-tactical level of war. An “effect” is defined as the physical, functional, or psychological outcome, event, or consequence that results from a specific action or actions that produce desired enemy actions, reactions, or inabilities to act.ⁱⁱ

Due to the changing character of future joint military operations and the development of new operational concepts, exploration into the ways in which the JFC will be required to organize their command and control (C2) architecture to match the future war fighting environment is necessary. The primary question to be answered is whether or not the current C2 architecture and "ad hoc" nature of a JFC's headquarters structure will support an effects-based campaign and subsequent effects-based operations. In accordance with joint doctrine, the current JFC C2 architecture is embodied in either functional and/or service components which are supported by a "J-code" organizational make-up. While some initiatives have been proposed to modify or complement the current C2 architecture, such as establishing a Standing Joint Force Headquarters (SJFHQ) organization and organizing capabilities based on Joint Task Groups (JTG), these are only the first steps in making significant changes to the entire legacy JFC C2 organization. An entirely new approach to organizing the JFC C2 architecture is needed in order to more efficiently and effectively plan and execute an effects-based campaign; thereby fully capitalizing on the speed and agility envisioned by RDO.

II. BACKGROUND

Prior to analyzing the current JFC C2 architecture and recommending proposed changes, it is necessary to briefly describe the terms RDO, effects-based campaign, and effects-based operations (EBO).

First, the RDO concept is a product developed by USJFCOM in response to Defense Planning Guidance tasking to develop "...new joint war fighting concepts and capabilities that will improve the ability of future joint force commanders to rapidly and decisively conduct particularly challenging and important operational missions."ⁱⁱⁱ RDO is a methodology by which military power is applied in conjunction with the other instruments of national power - diplomatic, informational, and economic - in an effects-based campaign to rapidly and decisively achieve political and military objectives without a large buildup of force. The objective is to conclude the conflict as quickly and resolutely as possible and reduce cost in terms of lives and national treasure.^{iv}

The current concept of a RDO is that it will integrate the three main tenets of knowledge, command and control, and operations to achieve the desired political and military objectives. In planning and conducting a RDO, the military acts in concert with the other appropriate instruments of national power in an attempt to understand and reduce the adversary's critical capabilities and coherence. The United States and its allies will asymmetrically engage an adversary from all directions and in dimensions against which the enemy has no effective counter, dictating the terms and tempo of the operation. The adversary is therefore overwhelmed, loses operational capabilities, and is unable to achieve desired objectives. The RDO concept includes two interrelated phases. First, at the national and theater strategic level, the U.S. will attempt to influence and deter an adversary by using diplomatic, information, and economic instruments of national power, supported by relevant flexible deterrent options. If deterrence fails, RDO transitions to a second phase in which the U.S. military will rapidly and decisively coerce, or upon order from the President, compel or defeat the enemy. RDO proposes an alternative to sequential, linear, and predictable operations by providing a construct for early, distributed, full-spectrum attacks against the adversary's ability to make war. Military power is applied in conjunction with the other instruments of national power in an effects-based campaign.^v

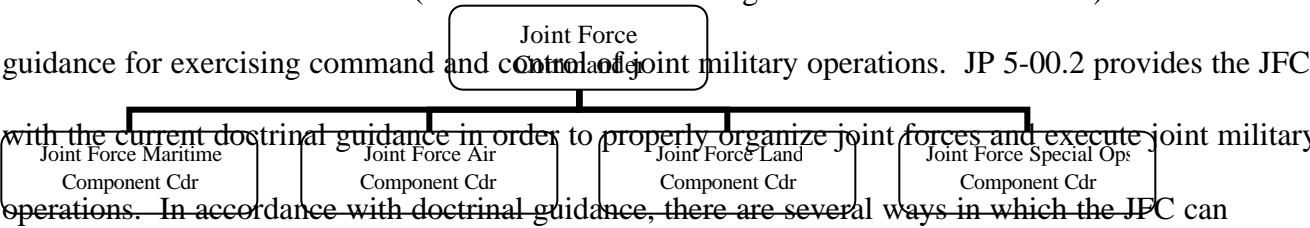
Second, an effects-based campaign is focused at the operational level of war. The JFC plans and conducts an effects-based campaign that is focused on not just the destruction of enemy military forces and infrastructure, but on creating "effects" - desired enemy actions, reactions, or inability to act - that forces adversary leaders to comply with U.S. desired objectives.^{vi} Plainly stated, the JFC is not just concerned with the physical destruction of the enemy's capabilities, but with creating an untenable situation for an adversary through the use of economic, informational, and diplomatic "tools" which may coerce or compel an adversary to submit to our will. An effects-based campaign is planned and executed with the primary goal of being able to meet national policy objectives and achieving the desired end state.

Lastly, effects-based operations (EBO) are conducted at the operational-tactical level of war. EBO are defined as actions that change the state of a system to achieve directed policy aims using the integrated application of select instruments of power. These actions are planned, executed, assessed, and adapted using a holistic understanding of the adversary and associated battlespace.^{vii} This understanding is incorporated into an intelligence product that is known as an Operational Net Assessment (ONA). Moreover, EBO are always part of a national or multinational campaign to translate policy into actions to create a desired end state.^{viii} Basically, the JFC must determine the desired end state of the conflict and work backwards to determine what "effects" must be executed on the current battlespace in order to achieve the overall campaign objective. EBO differs from current war fighting methodologies because the JFC is not focused on the physical destruction of the adversary or on an attrition-based warfare model, but employing all instruments of national power to affect the adversary's behavior and influencing his decision-making abilities.

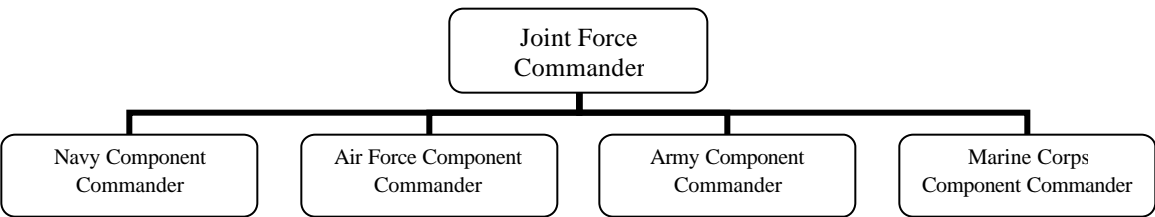
III. ANALYSIS

If Rapid Decisive Operations is the future of joint military operations, then will the current "ad hoc" method of forming the JFC's staff and C2 architecture be able to plan an effects-based campaign and execute effects-based operations? It is necessary to first examine what is the current JFC C2 architecture, identify shortfalls with this architecture, and describe some initiatives being explored to "fix" these shortfalls.

Joint Publication 5-00.2 (Joint Task Force Planning Guidance and Procedures) is the JFC's guidance for exercising command and control of joint military operations. JP 5-00.2 provides the JFC with the current doctrinal guidance in order to properly organize joint forces and execute joint military operations. In accordance with doctrinal guidance, there are several ways in which the JFC can organize joint forces, but traditionally, the JFC organizes along functional and/or service components (Figures 1 and 2).



(Figure 1: Joint Force Functional Component Organization)



(Figure 2: Joint Force Service Component Organization)

The functional component commanders have authority over the forces or military capabilities made available to them and utilize these forces to execute military operations in accordance with the

JFC's intent and concept of operations. The service component commanders are primarily tasked with providing administrative and logistic support for their service's forces.^{ix}

In addition to organizing the various components of his force, the JFC must also determine the organizational make-up of his headquarters. There are three main options that may be used to form a JFC headquarters (JFC HQ): use a standing JFC HQ, augment a core service component HQ, or form an "ad hoc" HQ from various contributors.^x All of these options feature "ad hococracy" in terms of command and control organization, training, and equipment.^{xi} Additionally, no matter what option is utilized, the JFC HQ is normally organized along the traditional "J-codes" with the primary war fighting codes being J3 (Operations) and J5 (Plans) with J1 (Administration), J2 (Intelligence), J4 (Logistics), and J6 (C4I) in support. From these various "J-codes" and the individual components described above, numerous groups, centers, boards, elements, and cells are organized within which decisions are made on how to plan and execute joint military operations.

The aforementioned organizational make-up has changed slightly over the past sixty years from its basic origins in World War II through the Cold War to the structural organization utilized today in accordance with Joint Pub 5-00.2. The bottom line is that the command and control of joint military operations in the 20th century has been characterized as "bridging the gaps and seams" between service component operations. The joint force currently plans and executes parallel, but distinct, air, maritime, and land operations, versus conducting "true" joint operations. The JFC HQ divides the battlespace through spatial control measures, such as area boundaries and fire support coordination lines. These self-imposed boundaries make it possible for each service or functional component to apply their war fighting capabilities to their particular piece of the battlespace while limiting the risk of interference among the separate dimensional operations. However, these self-imposed control measures also make it difficult to synchronize the full range of joint capabilities (joint

tactical actions) against any particular target set. Historically, this type of “bounded” warfare has resulted in U.S. forces conducting slower and less decisive operations than might have been normally conducted in several operations.^{xii}

In contrast, military operations envisioned in the 21st century that are characterized by RDO require a different way of organizing and commanding joint forces. Instead of de-conflicting joint operations across service or functional components, the future JFC HQ must be able to fully integrate joint capabilities into a proficient, cohesive, and networked operation that results in the synergy of force "effects". The correct package of joint force capabilities must be assembled at any point in time and space to create the required "effects" and, consequently, the desired outcomes. Furthermore, due to an effects-based campaign relying on the utilization of all instruments of national power, collaboration and coordination with nonmilitary organizations concerned with national security is essential.^{xiii}

As further evidence of the problems inherent in the current JFC C2 architecture, a recent study of current shortfalls and challenges that constrain the ability to perform fundamental joint force command and control activities pointed out the following issues:

- ***Ad Hoc JTF Activation and Augmentation:*** JTF structure and organization suffers from poor functionality, lack of flexibility, and limited adaptability. Forming JTF staffs in an ad hoc manner results in an organization that has not developed the close working relationships, implicit understanding, and mutual trust characteristic of high-performance teams.
- ***Insufficiently Trained JTF Commander and Staff:*** Consistency in training and skills to support JTF C2 functions is a persistent problem—one that is exacerbated by ad hoc staffing. Consistency in staff performance cannot be achieved unless each staff position is trained to a common standard. Further, JTF training does not adequately address expanded interagency and multinational coordination and interoperability.^{xiv}

In response to the changing nature of 21st century warfare and the problems inherent in the current JFC C2 architecture, the Chairman Joint Chiefs of Staff tasked USJFCOM with exploring the

concept of developing a Standing Joint Force Headquarters (SJFHQ) organization and conducting preliminary testing of this concept during Millennium Challenge 02.^{xv} The catalyst for exploration into a SJFHQ organization is the realization that RDO requires more advanced and responsive planning and quicker initiation of operations than can be accomplished by an ad hoc JFC HQ or ad hoc augmentation of a service HQ.^{xvi} To that end, USJFCOM is presently conducting experimentation and prototyping with a SJFHQ organization that consists of approximately fifty-five personnel. These personnel are a full time, standing body of RDO planners who are part of a regional combatant commanders staff. They possess the full range of skills and training necessary to plan and conduct coherently joint operations. The concept envisions that the SJFHQ personnel will work and train together on a daily basis, participate in planning and executing the combatant commander's security cooperation program, and conduct or maintain a continuous Operational Net Assessment and contingency planning for potential crises in their respective theater of operations. This headquarters command and control element differs from the traditional battle-rostered manning that features individuals who come together as an entity only upon activation of a JFC HQ – an extension of the ad hoc nature of JTF operations. Unlike the current “J-code” functional structure of today's JFC headquarters, the SJFHQ is organized around the operational functions of command, plans, operations, knowledge management, information superiority and support, performed by a warfighting headquarters. This structure provides an effective cross-functional context for the boards, centers, and cells operated by a JFC HQ. The SJFHQ is commanded by a flag/general officer who is able to assume the role of an operational level joint commander of a contingency operation in the theater.^{xvii}

The SJFHQ concept was experimented with during Millennium Challenge 02 (MC 02) July/August 2002 exercise. Initial observations documented that the employment of integrated and

common tools in concert with trained personnel using an established standard operating procedures within an open environment in the SJFHQ significantly improved JTF C2 by:

- Enabling a knowledge-centric approach to JTF-level planning and execution that leveraged the EBO concept and other initiatives.
- Significantly reducing timelines associated with traditional sequential planning when using joint operational planning in a collaborative environment.
- Significantly improving the broad-based understanding of combatant commander's intent, battlespace awareness, and coherency in the interaction of joint headquarters and component staffs.
- Providing earlier and rapid maturation of crisis situational awareness and effective pre-deployment planning.
- Reducing the ad-hoc nature and impact of how we currently stand up a JTF.
- Providing the agility to reduce the JTF forward footprint.
- Demonstrating that a functionally-organized SJFHQ element can rapidly and effectively integrate with a component JTF headquarters.^{xviii}

Additionally, when asked, "What equities does the SJFHQ bring to the JTF during the initial stages of stand-up and crises planning?" LTG Bell, Commanding General, III (US) Corps, (who served as the JTF commander in MC02) responded:

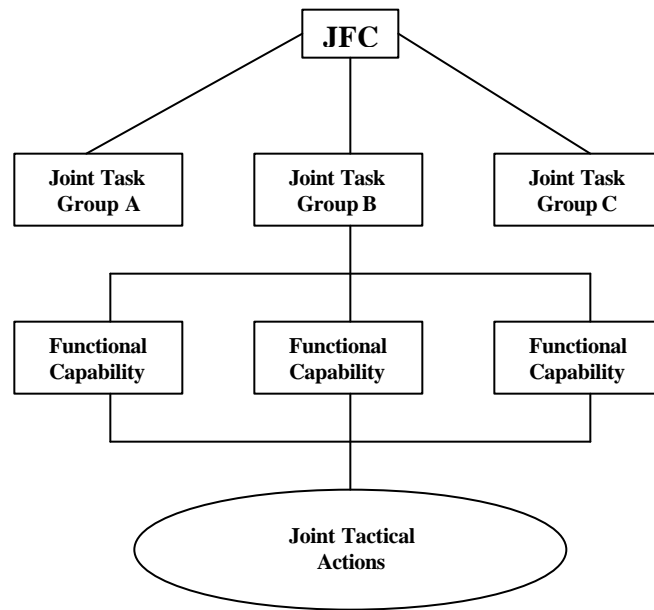
"[We took a] Small, fifty, fifty-five people [group][referring to the SJFHQ] in this contingency – about right – [they were] focused clear and very useful . . . it doubles or triples the capacity of three-star headquarters in our DOD to go do things for us; so, it's a combat multiplier of the highest order. It doesn't threaten headquarters; it multiplies the utility of the headquarters."^{xix}

These initial observations and the commander's comments provide the evidence that by making minor changes in the JFC HQ C2 architecture an exponential yield in combat capabilities may be realized. The spatial and service boundaries erected by functional and/or service components are an

impediment to conducting seamless joint operations. As stated by General Charles E. Wilhelm, USMC (Ret), former Commander U.S. South Command, in December 2001:

“Truly integrated joint operations will be a three decade journey, the 90’s was a decade of ignorant defiance, the 00’s will be a decade of reluctant compliance, and not until the 10’s will we see true joint operations.”^{xx}

Another new concept that is being explored to conduct RDO and further streamline the JFC C2 architecture is the formation of Joint Task Groups (JTG). This concept proposes removing the functional and/or service component level below the JFC and replacing it with capabilities-based JTGs. It is proposed that these JTGs will be formed "on the fly", will be tasked with conducting Joint Tactical Actions (JTAs) that are focused on achieving the desired "effects" utilizing the best mix of capabilities across all of the services, and will "break apart" once the JTA is complete.^{xxi} The joint force will no longer be organized along functional or service-centric lines, but will bring joint capabilities together to accomplish a desired action. A notional JTG/JTA C2 structure is shown in Figure 3:



(Figure 3: Notional JTG/JTA C2 structure)^{xxii}

As an example of how a JTG could be formed to execute a JTA, consider the threat of a small boat attack on an amphibious group preparing to conduct an amphibious landing. The JFC could form a JTG consisting of an AEGIS cruiser and Apache helicopters under the tactical control of the Marine Landing Force Commander to seek out and neutralize the small boat threat. Once this mission was accomplished, the JTG would be dissolved and each capability would be available for reassignment.

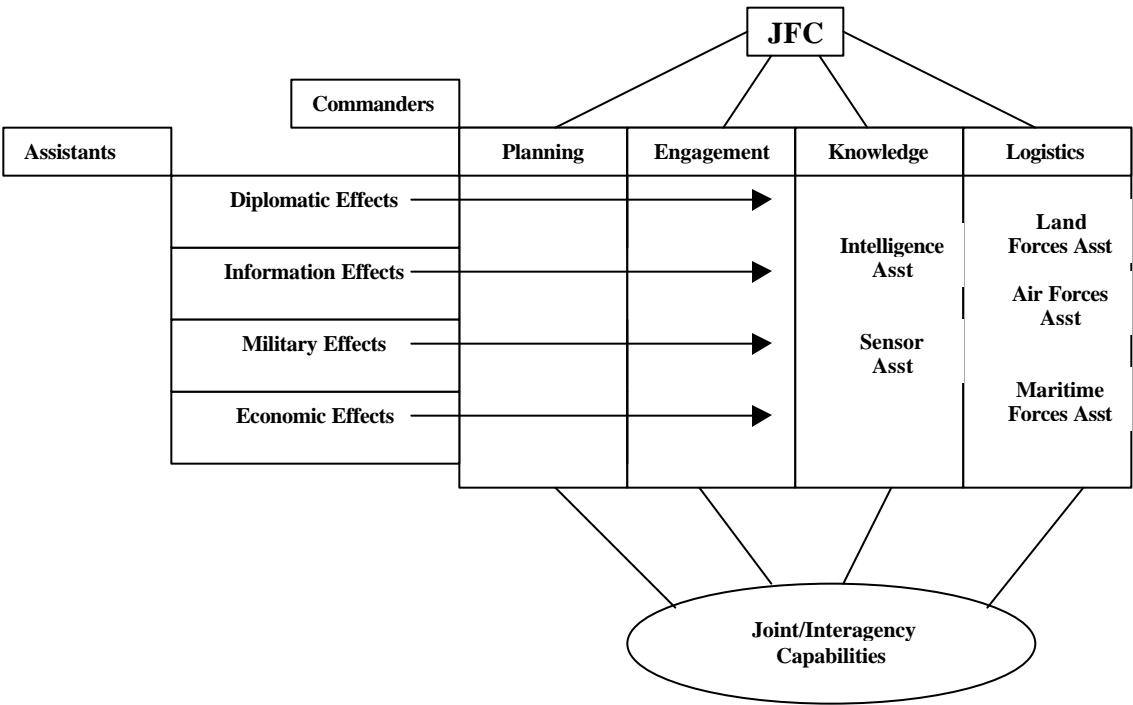
Organizing capabilities based on JTGs provides a number of significant advantages over the current functional and/or service component organizations in conducting RDO. The flatter command structure and horizontal integration of joint force capabilities will enable more effective centralized command and decentralized execution. Desired "effects" on the battlespace will be more efficiently accomplished by using the best mix of joint capabilities from across all component/service boundaries vice the current joint-by-deconfliction solution. The JFC's ability to rapidly form, deploy, employ, and redeploy integrated joint capabilities in response to rapidly developing situations will be significantly increased. Lastly, JTGs will support and encourage decision-making at the lowest level possible thereby increasing the speed, tempo, and execution of joint operations.^{xxiii}

IV. RECOMMENDATIONS

Proposals such as establishing a SJFHQ organization and experimenting with organizing capabilities based on JTGs are just the first steps in making changes to the legacy JFC C2 architecture currently supporting joint operations. To further capitalize on the speed and agility envisioned by RDO and distinguish this method of warfare as unique to the 21st century battlefield, the establishment of an entirely new JFC C2 architecture is required. This new JFC C2 architecture should be based on the ability to plan, coordinate, and execute an effects-based campaign; taking into consideration all elements of national power in order to counter the adversary. As previously mentioned, the traditional

JFC C2 architecture primarily focused on "purely military" methods of warfare organizing around functional and/or service components. It was based on a "linear" method of combat with a "platform-centric" bias and with each individual service component conducting operations within their own sphere of influence. If the U.S. military is truly committed to conducting joint operations based on achieving "effects", then the institutional C2 stovepipes of functional and service command relationships must be broken and new command relationships organized around creating "effects" on the battlefield must be formed. An Effects-Based Command and Control architecture may be the answer.

What then exactly is an Effects-Based Command and Control architecture? It is a proposed method by which the JFC organizes his command and control architecture around the ability to create "effects" in the joint operating area against the adversary.^{xxiv} It leverages and incorporates the interrelated concepts of RDO, effects-based campaigning, EBO, SJFHQ organization, and JTGs/JTAs into one complete command and control architecture for the JFC. The theoretical Effects-Based Command and Control architecture is shown in Figure 4:



(Figure 4: Effects-Based Command and Control Architecture)

Four major commanders work for the JFC, responsible for planning future joint/interagency operations, engaging the adversary with available joint/interagency capabilities, gathering information, ensuring communications connectivity, and maintaining the current operational picture, and providing logistical support. The planners focus on the campaign plan and future operations, while the engagers run the current operations. The division between planning and engaging divides the joint battlespace in a temporal rather than physical sense. Synchronization of "effects" occurs throughout the battlespace based primarily on the factor of time rather than on the factor of space. As previously discussed, the current JFC C2 organization segments the battlefield by physical medium into air, land, and maritime components.

Various assistants support the four major commanders in this theoretical C2 architecture. In both the Planning and Engagement Cells, a team of assistants are responsible for the "effects" which occur in various parts of the battlespace. They would plan, coordinate, and execute their missions utilizing the joint/interagency capabilities which have "effects" in a particular environment. A sample breakdown of functional duties and responsibilities might be:

- **Diplomatic Effects Assistant:** plan, coordinate, and execute a psychological warfare operation against the adversary's political leadership, work to isolate the adversary from their allies, and liaison with U.S. allies to gain support for the campaign against the adversary.
- **Information Effects Assistant:** plan, coordinate, and execute information operations against the adversary's population to isolate them from their leadership and conduct both physical and cyberspace attacks against the adversary's C2 nodes and infrastructure.

- **Military Effects Assistant:** plan, coordinate, and execute physical, psychological, and cyberspace attacks against the adversary's military forces and supporting infrastructure such as military logistical hubs.
- **Economics Effects Assistant:** plan, coordinate, and execute a cyberspace attack against the adversary's financial structure, a physical attack against the adversary's industrial production centers, and coordinate a seizure of monetary assets of the adversary's international companies.

One of the key elements of this theoretical JFC C2 architecture is the relationship between the Planning and Engagement Cells. During "peacetime" or the pre-hostilities phase, members of the Planning and Engagement Cells would be working in concert to plan various effects-based campaign strategies. Once a crisis begins to move past pre-hostilities, the members of this collective entity would "break apart". The Planning Cell members would be responsible for the overall effects-based campaign outside of a 72 hour time period, while the Engagement Cell members would be responsible for executing effects-based operations within a 72 hour time period. The Planning Cell members would generate a daily effects-based tasking order that looks 72 hours into the future and incorporates the overall effects-based campaign strategy. The effects-based tasking order would be received by the Engagement Cell for execution and minor modifications would be made based upon current operations. This method would allow for a linkage to be maintained between the Planning and Engagement Cells, so the two can mutually support the JFC's ultimate intent and contribute to the desired end state.

The other two major commanders, Knowledge and Logistics, would be responsible in supporting and sustainment roles. A sample breakdown of functional duties and responsibilities might be:

- **Knowledge Cell:** gathering intelligence/information regarding the adversary, ensuring theater-wide communications connectivity, and maintaining the current theater-wide operational picture.

1. ***Intelligence Assistant:*** gathering intelligence/information on the adversary, assisting in development of the ONA, and manning a Red Cell to coordinate with both the Planning and Engagement Cells.
 2. ***Sensor Assistant:*** coordinating the various battlefield and space-based sensors to feed into the common relevant operational picture.
- **Logistics Cell:** theater-wide logistics with three assistants (***Land, Air Force, and Maritime***) responsible for ensuring supply, logistics, and sustainment support for assigned joint capabilities/forces. A shape and respond type of arrangement.

The above theoretical Effects-Based Command and Control architecture divides responsibility for action more efficiently and thus is more responsive in the high tempo military operations characterized by the RDO concept. It has a number of advantages over the current JFC C2 architecture. The “battle rhythm” of the entire operation is smoother. Artificial boundaries, both within the JFC C2 organization (e.g., functional and/or service component commanders) and in the battlespace (e.g., air, land, sea, cyberspace) are removed. The full-range of joint and interagency capabilities are available for utilization by any of the four planning/engagement effects assistants. This arrangement allows for a more fluid reassignment or synergy of capabilities from one engagement area to another. There is a strong linkage between the planning and engagement functions of the JFC C2 architecture that is focused on executing an effects-based campaign based on the JFC's intent and desired end state.

V. SUMMARY & CONCLUSIONS

The United States military is in a period of transformation and is consequently conducting significant research, analysis, and experimentation to determine the nature of future warfare and its required joint force capabilities. USJFCOM, the lead military organization tasked with exploring military transformation and experimentation, has proposed that joint and combined operations in the 21st century will be characterized by a concept known as Rapid Decisive Operations (RDO).

As part of the research and analysis of the RDO concept, exploration into the ways in which the JFC will be required to organize their command and control architecture to match the future war fighting environment is occurring. Based on initial evidence, it appears that the current C2 architecture and "ad hoc" nature of the JFC's headquarters structure will not adequately support the RDO concept. Initiatives are being proposed by USJFCOM to modify or complement the current JFC C2 architecture: the Standing Joint Force Headquarters (SJFHQ) organization and Joint Task Groups (JTG) concepts. Both of these concepts are only the first steps in making significant changes to the entire legacy JFC C2 architecture.

An entirely new approach to organizing the JFC C2 architecture is needed in order to more efficiently and effectively plan and execute an effects-based campaign; thereby fully capitalizing on the speed and agility envisioned by RDO. An Effects-Based Command and Control architecture may be the answer. This new JFC C2 architecture is primarily based on the ability to plan, coordinate, and execute an effects-based campaign; taking into consideration all elements of national power in order to counter the adversary. An Effects-Based Command and Control architecture leverages and incorporates the interrelated concepts of RDO, effects-based campaigning, EBO, SJFHQ organization, and JTGs/JTAs into one complete command and control structure for the JFC.

Piecemeal changes to the current JFC C2 architecture will not enable the speed and agility envisioned by RDO, the establishment of an entirely new JFC C2 architecture is required. The Effects-Based Command and Control architecture proposed in this paper should be tested and analyzed during joint experimentation by USJFCOM to determine its utility to support RDO.

ENDNOTES

-
- ⁱ USJFCOM J9, *RDO Whitepaper Version 2.0*, 18 July 2002, p 7
- ⁱⁱ Ibid, p C-2.
- ⁱⁱⁱ Ibid, p 1.
- ^{iv} Ibid, p 1.
- ^v Ibid, p 10-11.
- ^{vi} Ibid, p 15.
- ^{vii} USJFCOM J9, *EBO Concept Paper Draft*, 09 January 2003, p 23.
- ^{viii} Ibid, p 2.
- ^{ix} Joint Chiefs of Staff, *Joint Pub 5-00.2*, 13 January 1999, p III-1 - III-3.
- ^x Ibid, p II-2.
- ^{xi} USJFCOM J9, *Joint Command and Control System Paper*, 03 August 2002, p 2.
- ^{xii} Joint C4ISR Decision Support Center, *Transforming Command and Control (C2): Refining and Implementing an Operational Concept for Joint Force C2 for 2005*, 10 December 2002, p 6.
- ^{xiii} Ibid, p 6.
- ^{xiv} Ibid, p 23.
- ^{xv} Chairman Joint Chiefs of Staff to Commander U.S. Joint Forces Command memorandum dated 02 November 2001. Subject: Guidance for USJFCOM Joint Experimentation.
- ^{xvi} *RDO Whitepaper Version 2.0*, p A-9.
- ^{xvii} USJFCOM J9, *Standing Joint Force Headquarters (SJFHQ) Concept Paper*, 13 September 2002, p 3-4.
- ^{xviii} Ibid, p 7-8.
- ^{xix} Ibid, p7.
- ^{xx} Navy Warfare Development Command, “Maritime Operational Planning Process” Briefing, 23 September 2002.
- ^{xxi} *RDO Whitepaper Version 2.0*, p A-12.
- ^{xxii} USJFCOM J9, “Laboratory Event Organizational Structure” Briefing, 01 October 2002.
- ^{xxiii} *RDO Whitepaper Version 2.0*, p A-12.
- ^{xxiv} Wagoner, Robert C., CAPT, USN, Gilmour, T.H., CAPT, USCG, Durante, G.G., CDR, USN, Smith, R.L., LT, USN, Castellano, F.X., LT, USN, “Command 21 - Speed of Command For The 21st Century,” unpublished research report distributed by the Director, Chief of Naval Operations Strategic Studies Group, Office of the Chief of Naval Operations, June 1997. The research and writing of this report provided the author with a foundation for conceptual thought for the theoretical basis of an Effects-Based Command and Control architecture. Additionally, basic elements of this report have been incorporated into the current theoretical development of an Effects-Based Command and Control architecture.

BIBLIOGRAPHY

Bingham, Price T. "Seeking Synergy: Joint Effects-Based Operations." Joint Force Quarterly, Spring 2002, p 52-59.

Bush, George W., President United States of America. "The National Security Strategy of the United States of America." September 2002.

Chairman Joint Chiefs of Staff to Commander U.S. Joint Forces Command memorandum dated 02 November 2001. Subject: Guidance for USJFCOM Joint Experimentation.

Joint Chiefs of Staff. *Joint Vision 2020*. Washington, DC: June 2000.

Joint Chiefs of Staff. *Joint Pub 3-0, Doctrine for Joint Operations*. Washington, DC: 10 September 2001.

Joint Chiefs of Staff. *Joint Pub 5-00.2, Doctrine for Joint Task Force Planning Guidance and Procedures*. Washington, DC: 13 January 1999.

Joint Chiefs of Staff. *Joint Pub 6-0, Doctrine for Command, Control, Communications, Computer (C4) Systems Support to Joint Operations*. Washington, DC: 30 May 1995.

Joint Chiefs of Staff. *Joint Pub 6-02, Joint Doctrine for Operational/Tactical Command, Control, and Communications Systems*. Washington, DC: 01 October 1996.

Joint Chiefs of Staff, J7 Directorate. *Joint Capstone Concept: Full Spectrum Dominance Through Joint Integration (Version 3.0 Draft)*. Washington, DC: 09 December 2002.

Joint C4ISR Decision Support Center. *Transforming Command and Control (C2): Refining and Implementing an Operational Concept for Joint Force C2 for 2005*. Washington, DC: 10 December 2002.

Joint Warfighting Center. *Joint Command and Control Doctrine Study*. Fort Monroe, VA: 01 February 1999.

Myers, Gene. "Concepts to Future Doctrine." A Common Perspective, April 2002, p 6-9.

Myers, Richard B., GEN, USAF. "A Word from the Chairman." Joint Force Quarterly, Spring 2002, p 1-7.

Navy Warfare Development Command. "Maritime Operational Planning Process." Briefing, NWDC, Newport, RI: 23 September 2002.

U.S. Joint Forces Command, J9 Directorate. *Rapid Decisive Operations Whitepaper Version 2.0*. Norfolk, VA: 18 July 2002.

U.S. Joint Forces Command, J9 Directorate. *Effects-Based Operations Concept Paper (Draft)*. Norfolk, VA: 09 January 2003.

U.S. Joint Forces Command, J9 Directorate. *Joint Command and Control Systems Paper*. Norfolk, VA: 03 August 2002.

U.S. Joint Forces Command, J9 Directorate. *Standing Joint Force Headquarters (SJFHQ) Concept Paper*. Norfolk, VA: 13 September 2002.

U.S. Joint Forces Command, J9 Directorate. "Rapid Decisive Operations." Briefing. USJFCOM, Norfolk, VA: 19 June 2001.

U.S. Joint Forces Command, J9 Directorate. "Rapid Decisive Operations/Effects Based Operations: Experimental Concepts Review." Briefing. USJFCOM, Norfolk, VA: 27 August 2002.

U.S. Joint Forces Command, J9 Directorate. "SJFHQ Prototype: Initial Planning and Implementation Activities." Briefing. USJFCOM, Norfolk, VA: 27 August 2002.

U.S. Joint Forces Command, J9 Directorate. "Laboratory Event Organizational Structure." Briefing. USJFCOM, Norfolk, VA: 01 October 2002.

Wagoner, Robert C., CAPT, USN, Gilmour, T.H., CAPT, USCG, Durante, G.G., CDR, USN, Smith, R.L., LT, USN, Castellano, F.X., LT, USN, "Command 21 - Speed of Command For The 21st Century," unpublished research report distributed by the Director, Chief of Naval Operations Strategic Studies Group, Office of the Chief of Naval Operations, June 1997.